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**Datasheet for the decision
of 13 November 2007**

Case Number: T 0543/05 - 3.3.09

Application Number: 94925715.8

Publication Number: 0775050

IPC: B32B 7/04

Language of the proceedings: EN

Title of invention:

Polytetrafluoroethylene laminate and method of producing same

Patentee:

TEXTILES COATED INCORPORATED

Opponent:

HI-Tech Fiber ApS

Headword:

-

Relevant legal provisions (EPC 1973):

EPC Art. 123(2), 54, 56

Keyword:

"Added subject-matter - no, implicit disclosure, disclaimer - no"

"Novelty - yes"

"Inventive step - yes"

Decisions cited:

G 0001/03, G 0002/03

Catchword:

-



Case Number: T 0543/05 - 3.3.09

D E C I S I O N
of the Technical Board of Appeal 3.3.09
of 13 November 2007

Appellant I: HI-Tech Fiber ApS
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
1 March 2005 concerning maintenance of European
patent No. 0775050 in amended form.

Composition of the Board:

Chairman: P. Kitzmantel
Members: J. Jardón Álvarez
M-B. Tardo-Dino

Summary of Facts and Submissions

- I. This decision concerns the appeals filed by the Patent Proprietor and the Opponent against the interlocutory decision of the Opposition Division which found that the European patent No. 0 775 050 in amended form satisfied the requirements of the EPC.
- II. The patent was based on the European patent application No. 94925715.8 in the name of TEXTILES COATED INCORPORATED, which had been filed on 8 August 1994 as International application PCT/US94/08695 (WO 96/04133). The grant was announced on 23 June 1999 (Bulletin 1999/25) on the basis of 16 claims.
- III. A Notice of Opposition had been filed against the patent by HI-Tech Fiber ApS on 21 March 2000. The Opponent requested the revocation of the patent in its entirety on the grounds of lack of novelty and inventive step (Article 100(a) EPC), insufficient disclosure (Article 100(b) EPC), and extension beyond the content of the application as originally filed (Article 100(c) EPC).

In the course of the opposition proceedings, *inter alia* the following documents were filed:

D3: US - 3 953 566;

D4: WO - A - 96/03457;

D6: GB - 1 396 131;

D7: Letter of 25 August 1993 from Textiles Coated International to Mr. Benny Mathiesen, KE-Burgmann, including presentation material of the LFP 2100 Series and subsequently forwarded test results, dated 8 November 1993;

D8: US - 3 962 153 and

D9: WO - A - 94/04334

First statement from Mr. Warren DiClemente, Business Manager of DeWAL Industries Inc., filed with Patent Proprietor's letter dated 13 July 2001.

IV. The decision under appeal was based on a main request and an auxiliary request.

- Independent Claims 1 and 7 of the main request read as follows:

"1. A flexible fluoroplastic chemical barrier laminate having improved toughness, said laminate comprising a plurality of axially oriented sintered PTFE films, at least one of said films having its direction of orientation disposed angularly with respect to that of at least one other of said films adjacent to said one film, said laminate being obtainable by laminating a plurality of axially oriented unsintered non-expanded PTFE films directly together without entrapped air or the interposition of an adhesive therebetween at a temperature above the melt temperature of said films but below 482°C (900°F) with at least one of said unsintered films having its direction of orientation disposed angularly with respect to that of at least one

other of said unsintered films adjacent to said one unsintered film, said films being sintered during said lamination and remaining axially oriented after said lamination.

7. A method of producing a flexible fluoroplastic chemical barrier laminate having improved toughness, said method comprising:

(a) stacking a plurality of axially oriented unsintered non-expanded polytetrafluoroethylene films without interposing an adhesive therebetween, with at least one of said films having its direction of orientation disposed angularly with respect to that of at least one other of said films adjacent to said one film; and

(b) confining the stacked films between heated platens to expel entrapped air from between said films while laminating said films at a temperature above the melt temperature of said films but below 482°C (900°F), said films being sintered during lamination and remaining axially oriented following lamination."

- The claims of the auxiliary request were the method claims of the granted version renumbered as Claims 1 to 10; Claim 1 was thus identical to Claim 7 of the above main request, but for the absence of the word "non-expanded" in step (a).

V. By its interlocutory decision announced orally on 9 December 2004 and issued in writing on 1 March 2005, the Opposition Division found that the patent as

amended in accordance with the first auxiliary request met the requirements of the EPC.

The Opposition Division rejected the main request because in its opinion the reference in Claim 1 to "non-expanded" PTFE films resulted in the skilled person being provided with information which was not directly and unambiguously derivable from the application as originally filed, contrary to the requirements of Article 123(2) EPC.

The Opposition Division maintained the patent with the claims of the first auxiliary request because it considered the subject-matter of the method claims novel having regard to the disclosure of documents D3, D4, D6, D7, D8 and D9. Concerning D3 it pointed out that no disclosure could be found in this document of a lamination process using heated platens.

As to inventive step the Opposition Division stated that the prior art gave no hint at the claimed solution of the existing technical problem, namely the provision of a more cost-effective process for producing a highly tough fluoroplastic barrier laminate.

VI. On 29 April 2005 the Opponent (Appellant I) lodged an appeal against said decision of the Opposition Division and paid the appeal fee on the same day.

In the Statement of Grounds of Appeal filed on 28 June 2005, Appellant I requested the revocation of the patent in its entirety. It also filed the following fresh documents:

D14: US - 4 575 470;

D15: US - 2005/0096737;

D16: US - 3 322 613;

D17: RU - 426878 and its English translation

VII. On 3 May 2005, the Patent Proprietor (Appellant II) also lodged an appeal against the decision of the Opposition Division and paid the appeal fee on the same day.

In the Statement of Grounds of Appeal filed on 1 July 2005, Appellant II requested that the decision under appeal be set aside and a patent be granted with the claims according to the main request as filed before the Opposition Division.

Appellant II filed with the Statement of Grounds of Appeal a second statement from Mr. Warren DiClemente, Business Manager of DeWAL Industries Inc., dated 24 June 2005.

VIII. Further submissions were filed by Appellant I with letters dated 7 November 2005, 4 January 2006 and 26 January 2007 and by Appellant II with letters dated 6 January 2006, 16 January 2006, 7 February 2006, 29 November 2006 and 17 August 2007.

IX. On 22 May 2007 the Board dispatched the summons to attend oral proceedings. In a communication dated 14 September 2007, the Board acknowledged the novelty of Claim 1 of the auxiliary request and drew the

attention of the parties to the points to be discussed during the oral proceedings.

- X. In response to the Board's communication, Appellant I filed a further submission dated 25 October 2007 and Appellant II filed, with letter dated 29 October 2007, a further submission including an alternative main request and a set of claims for a second auxiliary request.
- XI. The arguments presented by Appellant I in its written submissions and at the oral proceedings held on 13 November 2007 may be summarized as follows:
- the generic term "PTFE film" used in the application as originally filed embraced both "expanded films" and "non-expanded films" and no reference to "non-expanded" films could be found in the application as originally filed. The broad interpretation of the term PTFE films was in accordance with the teaching of the application as originally filed.
 - Moreover the term "non-expanded" constituted a disclaimer not fulfilling the criteria governing the allowability of a disclaimer as set out in the decisions G 1/03 (OJ EPO 2004, 413) and G 2/03 (OJ EPO 2004, 448).
 - There was nothing in the original disclosure from which it could be derived that the PTFE films therein disclosed were non-expanded PTFE films. The results in the examples did not allow any conclusion in that respect to be drawn. The nature - expanded or non-expanded - of the films processed into the

laminates could not be identified by means of density calculations using the data given for the laminates. On the contrary, on the basis of this information one could just as well infer that expanded PTFE films had been used.

- Appellant I further contested the novelty of the subject-matter of Claim 1 having regard to the disclosure of D9, and the novelty of the subject-matter of Claim 7 having regard to example 9 of D3.

- Concerning inventive step, Appellant I considered D9, directed to the preparation of laminates to be used as chemical barriers, as the closest prior art. Appellant I regarded it as obvious to apply the teaching of D9 also to unexpanded starting materials in order to solve the problem underlying the patent in suit, namely to provide alternative laminates as chemical barriers. Moreover, example 10 of D3, by pointing to the extremely low filtering rates of unexpanded films, gave a hint to the usefulness of such unexpanded materials as barrier materials.

XII. The written and oral arguments of Appellant II may be summarized as follows:

- The skilled person would derive from the content of the application as filed that the material used was a "non-expanded" PTFE, essentially because the stated objective of the invention was to provide PTFE laminates having excellent chemical resistance and barrier properties. Taking that into account, it would be illogical to use porous expanded PTFE films as starting materials. Furthermore, the skilled

person would understand that it would be impossible to produce a barrier product by laminating expanded PTFE films under the process conditions used in the patent.

- the skilled person would also recognise that an "unsintered PTFE film" as originally disclosed was different from and did not exhibit the highly characteristic porous structure of expanded PTFE films. Consequently the term "non-expanded" introduced during the granting stage merely clarified the nature of the PTFE films used without adding any new information to the term "unsintered PTFE film" used in the application as originally filed.
- It also filed two statements by Mr. DiClemente in order to prove that the skilled reader would recognize in the application as originally filed that only non-expanded PTFE films could be used. According to these statements, expanded PTFE films were speciality products specifically identified as such, for instance as "e-PTFE", and identified by their properties (pore size, bubble point pressure, water entry pressure, etc.). The absence of such information in the present case implied that their use was not contemplated.
- Concerning novelty, Appellant II pointed out that D3 did not provide a clear and unambiguous disclosure of the process of Claim 7, and that the laminates of D9 were distinguishable from the laminates of Claim 1 constituted by non-expanded films because the laminates of D9 retained the node and fibril

structure of the expanded films used for its preparation.

- Concerning inventive step, Appellant II regarded D9 as the closest prior art document. It saw the differences between the patent in suit and D9 in the use of a different starting material (unsintered PTFE film, which is a precursor of the expanded PTFE film used in D9) and the use of processing conditions much simpler and less energy-consuming than those employed in D9. In its opinion there was no pointer in the prior art to modify the process of D9 in order to arrive at the claimed process and laminates. Appellant II also pointed out that the present invention had received several awards from independent institutions. These awards should confirm that the invention provided an important technical advance demonstrating its non-obviousness over the prior art.

XIII. Appellant I (Opponent) requested that the decision under appeal be set aside and that the European patent No. 0 775 050 be revoked.

Appellant II (Patent Proprietor) requested that the decision under appeal be set aside and the patent be maintained on the basis of Claims 1 to 16 of the main request filed with the letter dated 27 October 2000, or on the basis of Claims 1 to 16 of the "alternative" main request filed with the letter dated 29 October 2007; auxiliarily, that the patent be maintained as decided by the Opposition Division (Claims 1 to 10 as filed with the letter dated 22 December 2003 - first auxiliary request), or on the basis of Claims 1 to 10

of the second auxiliary request as filed with the letter dated 29 October 2007.

Reasons for the Decision

1. The appeal is admissible.

MAIN REQUEST

2. *Amendments (Articles 100(b) and 123(2) EPC)*
 - 2.1 The only objection raised by Appellant I with regard to this issue is the introduction of the term "non-expanded" in the definition of the polytetrafluoroethylene (PTFE) films used for the preparation of the claimed chemical barrier laminates into granted Claim 1 and into Claim 7 as amended before the Opposition Division (cf. "axially oriented unsintered **non-expanded** polytetrafluoroethylene films" [emphasis added]).
 - 2.2 The question to be decided is whether the addition of the word "non-expanded", which is accepted not to have been explicitly disclosed in the application as originally filed, is directly and unambiguously derivable from the application as originally filed.
 - 2.3 The content of the application as originally filed can be summarised as follows:
 - 2.3.1 The claimed invention aims "to provide a novel and improved PTFE laminate having high tensile and tear strengths, flexibility, and excellent chemical

resistance and barrier properties" (see page 2, lines 7 - 9 of the application as originally filed). The laminates are "constructed of oriented PTFE films" (page 2, lines 16 - 17. The starting films may be unsintered or sintered (see page 4, lines 3 - 5) but the preferred PTFE films are "unsintered prior to lamination, and are uniaxially oriented, typically as a result of their having been extruded or calendered during production" (page 2, lines 17 - 19). The films are said to be "sintered during lamination, but retain their orientation" (page 2, lines 19 - 20).

2.3.2 The lamination is carried out by heating the films to a temperature between 349 and 404°C (660 and 760°F), at a pressure of at least 7×10^3 Pa (1 p.s.i.) for a period of time between 20 and 70 seconds (see Claims 9 - 11).

2.3.3 In the preferred embodiments according to the examples unsintered PTFE films are laminated at 382°C (720°F) and 276×10^3 Pa (40 p.s.i.) for a period of 70 seconds. The films are sintered during lamination and retain their respective direction of orientation (see page 4, lines 21 - 23).

2.4 The crucial issue for the assessment of the admissibility under Article 123(2) EPC of the claimed subject-matter is whether it is evident beyond any doubt to the skilled person reading the original description that the PTFE films used were "non-expanded" films.

2.5 In the Board's judgement, this is indeed the case for the following reasons:

2.5.1 Taking account that the objective of the patent is to produce a laminate having excellent barrier properties, it would be clear to the skilled person reading the application as originally filed that, in order to achieve such barrier properties, porous films would not be suitable. The skilled person would consider that expanded PTFE films should be avoided because they are porous (see for instance, D9, page 2, lines 3 - 5 where it is stated that expanded PTFE cannot be used as a barrier layer to chemicals since it can rapidly absorb through its pores liquids that have a low surface tension).

2.5.2 Moreover, the films used as starting materials are qualified in the application as originally filed as unsintered prior to lamination, and uniaxially oriented, "typically as a result of their having been extruded or calendered during production". It is undisputed that these manufacturing methods result in non-expanded films. The films manufactured in this way are then laminated and the specification is completely silent about any expansion process to be carried out before lamination. The skilled reader would undoubtedly understand that films obtained after extrusion or calendering, that is to say, non-expanded films, have been used.

Further, the lamination conditions disclosed in the application as filed are comparatively gentle. The skilled person would be aware of the fact that under these mild conditions it would not be possible to produce a barrier product using as starting material an expanded (porous) material, because air would remain entrapped within and between the films. This is

confirmed by the severe laminating conditions of the expanded films used in D9, which discloses temperatures of from 330 - 390°C, pressures of from 1.0×10^6 - 2.4×10^6 Pa (150 - 350 p.s.i.) and times of from 15 minutes to 4 hours.

- 2.5.3 Finally, there is nothing in the application as originally filed which would suggest that expanded films could be used. The fact that in the application as originally filed both unsintered and sintered films could be used as starting material and in the granted version only unsintered films were used does not invalidate the above interpretation. The possible use of sintered films, originally envisaged by the present inventors as a less preferred alternative, does not entail that these must have been expanded, because the properties sintered/unsintered are unrelated to and independent from the properties expanded/non-expanded. The skilled person would be aware that extruded and/or calendared PTFE films, which by these processes become axially oriented, are unsintered and non-expanded, unless subjected to further treatment not suggested in application as filed; expansion of the films occurs by stretching under certain conditions (cf. D3, column 2, line 7 to column 3, line 17), resulting in expanded, unsintered films, which thereafter may be heated above the PTFE's crystalline melting point leading to "amorphous locking", i.e. sintering of the stretched, expanded film (D3, column 3, lines 49 to 65).
- 2.5.4 In summary, the teaching that the PTFE films used as starting material are "non-expanded" is a teaching that can be directly and unambiguously derived by the skilled person from the application as originally filed.

2.6 The Opposition Division pointed out that in its broadest possible meaning the term "PTFE film" covered both non-expanded and expanded films. Appellant I further noted that the term "non-expanded" relates to a specific characteristic of the "PTFE films" and the fact that this characteristic was not defined implied that both possibilities were embraced by the original disclosure. In any case, in its opinion the amendment amounted to an exclusion of the "expanded" films and should be regarded as a disclaimer. This "disclaimer" did not fulfil the criteria for assessing the allowability of a disclaimer as set out in the decisions G 1/03 (OJ EPO 2004, 413) and G 2/03 (OJ EPO 2004, 448).

2.7 These arguments cannot be accepted by the Board.

2.7.1 The assertion of the Opposition Division that the term "PTFE film" embraces both expanded and non-expanded films is only correct when the term is read in isolation. As already explained above (see 2.5), in the context of the application as originally filed the only meaningful interpretation of the term "PTFE film" is that it relates exclusively to non-expanded PTFE films. Any different interpretation makes no sense in the light of the application as originally filed and would be dismissed by the skilled person.

2.7.2 It is also noted that this interpretation by the Board is fully consistent with the use of the terms "unexpanded" (equivalent to "non-expanded") and "expanded" in the prior art documents in the proceedings.

Therein a PTFE film is characterized as "expanded PTFE film" (sometimes referred as ePTFE film) when it has been subjected to an expansion process (see for instance D9, page 1, line 29 - page 2, line 9). The absence of the qualification "expanded" implies that the film has not been subjected to such an expansion process and consequently there is no need to specifically highlight the absence of this special-treatment-derived feature (see also paragraph (a) of the first statement of Mr. DiClemente).

A PTFE film is characterized in the prior art as "unexpanded" only when this is necessary for the purpose of comparison with an "expanded" film (cf. D3, Tables 4, 6, 8, 10, etc.; see also D9, paragraph bridging pages 1 and 2). If such comparison is not an issue the "unexpanded" film is referred to merely as "the unsintered film" (see D3, example 3, column 8, line 60, and compare with column 10, lines 25 - 26 or example 6, column 12, line 62 and column 13, line 25 and compare with Table 6).

- 2.7.3 Thus the introduction of the word "non-expanded" into Claims 1 and 7 merely made explicit what was already implicit in the application as originally filed, namely that the films to be used as starting materials are "non-expanded PTFE films".

This amendment does not therefore mean that specific embodiments covered by the original disclosure are now excluded (or "disclaimed"). Consequently, it does not amount to a disclaimer and the criteria for allowability of disclaimers are not relevant.

2.8 For these reasons the Board is satisfied that the amendments made to Claims 1 and 7 do not introduce subject-matter which goes beyond the content of the application as originally filed.

3. *Novelty (Article 54 EPC)*

3.1 The novelty of Claim 1 was contested by Appellant I having regard to the disclosure of D9 and the novelty of Claim 7 was contested having regard to the disclosure of example 9 of D3.

3.2 Claim 1 is directed to a flexible fluoroplastic chemical barrier laminate comprising a plurality of axially oriented sintered PTFE films, the laminate being obtainable by laminating a plurality of axially oriented unsintered non-expanded PTFE films.

3.2.1 Document D9 discloses a densified previously expanded PTFE article and a process for its production (see abstract). The process consists of the bonding and simultaneous densification of a plurality of sheets or tapes comprised of expanded polytetrafluoroethylene (ePTFE) as obtained in D3 (see D9, page 5, lines 2 - 6). The process is carried out under conditions which retain the node and fibril structure of the original ePTFE (see page 5, lines 11 - 13).

3.2.2 The barrier laminates according to Claim 1 of the patent in suit are on the contrary made from unsintered non-expanded PTFE films under mild lamination conditions. As a consequence, the final laminate does not exhibit any characteristics (voids, node and fibril

structure) resulting from and typical for an expansion process (see D9 and also D3, Fig. 1 and column 6, lines 25 - 43).

3.2.3 The claimed laminates are therefore clearly distinguished from the products of D9.

3.3 Claim 7 is directed to a method of producing a flexible fluoroplastic chemical barrier laminate by stacking a plurality of axially oriented unsintered non-expanded polytetrafluoroethylene films and confining the films between heated platens to expel entrapped air.

3.3.1 This process is clearly distinguishable from the process of example 9 of D3 which uses an expanded film for the preparation of the laminate and does not use heated platens to expel entrapped air during the preparation of laminate, the expanded, amorphously locked laminate being made by clamping to a rigid frame two layers of expanded film and heating at 370°C for 7 minutes.

3.4 For these reasons the subject-matter of the claims is novel.

4. *Inventive step (Article 56 EPC)*

4.1 Closest prior art

4.1.1 The Board considers in agreement with both Appellants that the closest prior art is represented by document D9, since it also addresses the production of PTFE articles having barrier properties.

- 4.1.2 As already discussed above under 3.2.1, D9 discloses a multilayer material constituted by densified expanded PTFE sheets and a process for its preparation (see also Claims 1 and 3). D9 acknowledges in its introduction (see pages 1 and 2 under "Background of the invention") that films of low porosity PTFE exhibit poor mechanical properties such as poor strength and flexibility, which limit their use. D9 further acknowledges that expanded porous polytetrafluoroethylene as produced by the process of D3 and having a microstructure characterised by nodes interconnected by very small fibrils shows higher strength but, owing to its porous structure, cannot be used as a barrier layer.
- 4.1.3 D9 aims to alleviate this prior art drawbacks by a process wherein two or more layers of expanded porous PTFE are placed inside a heat and pressure stable flexible container, gas is evacuated from the container, which is then subjected to a high pressure between 1.0×10^6 - 2.4×10^6 Pa (150 - 350 p.s.i.) and a temperature of at least 368°C to obtain a densified expanded PTFE (see Claim 3). The thus obtained products are useful as a barrier to harsh chemicals (cf. page 2, lines 5 - 9).
- 4.1.4 The barrier laminates of Claim 1 of the patent in suit differ from the disclosure of D9 essentially by the use of axially oriented unsintered non-expanded PTFE films as starting films and by the use of milder conditions for the preparation of the laminate.

4.2 Problem to be solved

4.2.1 The patent in suit does not attribute any specific effect to these distinguishing features. According to paragraphs [0034] - [0037] the laminates of the invention exhibit improved tensile and tear strengths in all directions when compared with laminates made of non-oriented films. However, a direct comparison with the products of D9 cannot be made with the data in the patent and these advantages can therefore not be taken into account when formulating the problem to be solved.

4.2.2 Thus, in the absence of any established advantage over the disclosure of D9, the objective technical problem to be solved by the patent in relation to said prior art can thus be formulated as being the provision of alternative PTFE laminates having high tensile and tear strengths and good chemical resistance and barrier properties (see also [0005]).

4.3 Solution to the problem

4.3.1 The solution to this problem is provided by the claimed laminates prepared by laminating a plurality of axially oriented unsintered non-expanded PTFE films, with at least one of said films having its direction of orientation disposed angularly with respect to at least one other adjacent film.

4.3.2 The examples in the patent in suit show that the above mentioned problem has been credibly solved. The laminates thus obtained are tear resistant and flexible and are able to provide resistance against chemical attack. This was not challenged by Appellant I.

4.4 Inventive step

- 4.4.1 It remains to be decided whether, in view of the available prior art documents, it would have been obvious for the skilled person to solve this technical problem by the means claimed, namely by laminating a plurality of differently axially oriented unsintered non-expanded PTFE films.
- 4.4.2 Document D9 does not give any hint to this solution. On the contrary, as stated above, non-expanded PTFE films are discarded as starting materials in D9 due to their poor mechanical properties (see page 1, lines 21 - 22).

Document D3 also gives no hint to this solution. D3 discloses a process for the production of a porous article which comprises expanding a highly crystalline PTFE made by extrusion technique by stretching it (see Claim 1). The only laminate exemplified in D3 is made of two layers of expanded films and results in an expanded, amorphous locked laminate which does not show barrier properties (see example 9).

The Board also disagrees with the argument of Appellant I that the skilled person would deduce from the reference to the low filtering rates of unexpanded unsintered single films mentioned in example 10 of D3 that they could be used for preparing laminates having good barrier properties. There is no compelling logic behind this argument because the information that the unexpanded, unsintered films were unsuccessful as semi-permeable membranes offers no information about their

possible use for the preparation of laminates having a different property, namely functioning as a chemical barrier material.

4.4.3 Thus, the finding that laminates having excellent chemical barrier properties could be prepared from axially oriented unsintered films under mild conditions is not a teaching the skilled person, being confronted with the task to provide a solution to the existing technical problem, would find in the available prior art.

4.5 Hence, the Board considers that, in the light of the cited prior art, it would not have been obvious to a person skilled in the art to arrive at the laminates claimed in Claims 1 to 6 or at the process of their preparation as claimed in Claims 7 to 16. The subject-matter of the claims therefore involves an inventive step within the meaning of Article 56 EPC.

5. In summary, the Board concludes that the grounds of opposition raised by the Appellant I do not prejudice the maintenance of the patent as amended.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the Opposition Division with the order to maintain the patent on the basis of the following documents:
 - Claims 1 - 16 of the main request as filed with the letter dated 27 October 2000

 - pages 2 - 9 of the granted specification

 - figures 1-4B of the granted specification.

The Registrar

The Chairman

G. Röhn

P. Kitzmantel